Preliminary

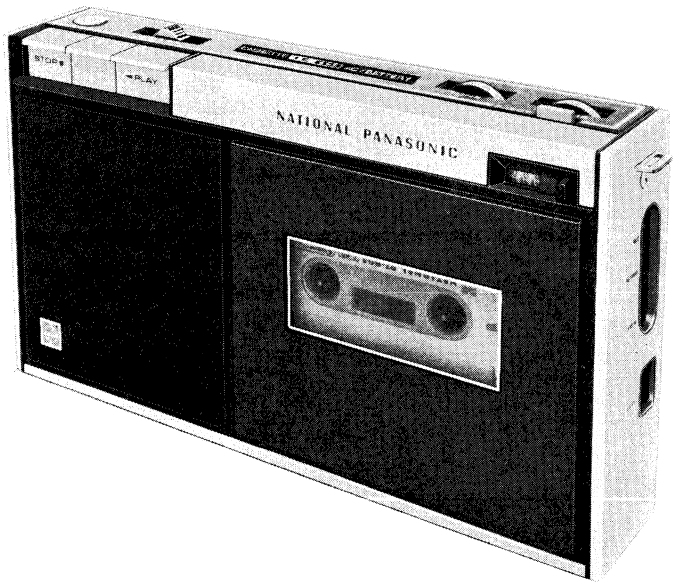
ORDER NO. ARD-7007058

NATIONAL

Service Manual

CASSETTE TAPE RECORDER WITH AUTO STOP AND INTEGRATED CIRCUITS

MODEL RQ-222S



SPECIFICATIONS

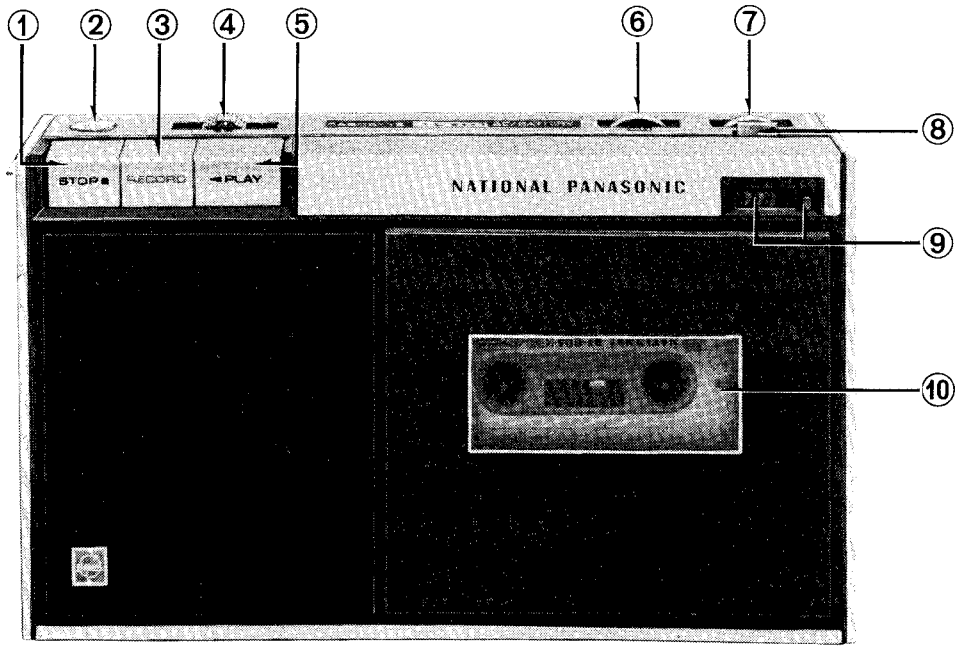
Power Source:	AC: 90~110, 110~125, 220~250 volts 50/60 Hz Dry battery 6 volts (four UM-2) Car battery (optional car cord)
Power Consumption:	Approx. 5 W
Motor:	DC electronic govenor motor
Operation System:	Push button operation
Tape Speed:	1-7/8 ips
Transistor:	2SB324(3) 2SC183(2)
IC's:	EHDAA201(1) EHDAP202(1) EHDGA203(1)
Diodes:	OA90(2)
Thermistor:	QVM800B(1)
Rectifier:	SIB0201CR(1)
Track System:	2 track monaural
Max. Output Power:	1 W

Frequency Response:	70~10,000 Hz
Recording System:	AC bias
Fast Forward Time:	Approx. 90 seconds with cassette tape C-60
Rewind Time:	Approx. 90 seconds with cassette tape C-60
Built-in Speaker:	3" PM Dynamic speaker
Inputs:	"MIC" input 200Ω "AUX" input 100 KΩ "DC" input 6 V "AC" input
Outputs:	"EXT SP" output 8Ω "REMOTE" output
Dimensions:	9-1/4"(W)×5-1/4"(H)×1-7/8"(D)
Weight:	3 lbs

<EXPORT DIVISION>
MATSUSHITA ELECTRIC TRADING CO., LTD.
P.O. Box 288 Central, Osaka, Japan

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
AUDIO TAPE RECORDING DEPT.

LOCATION OF PARTS



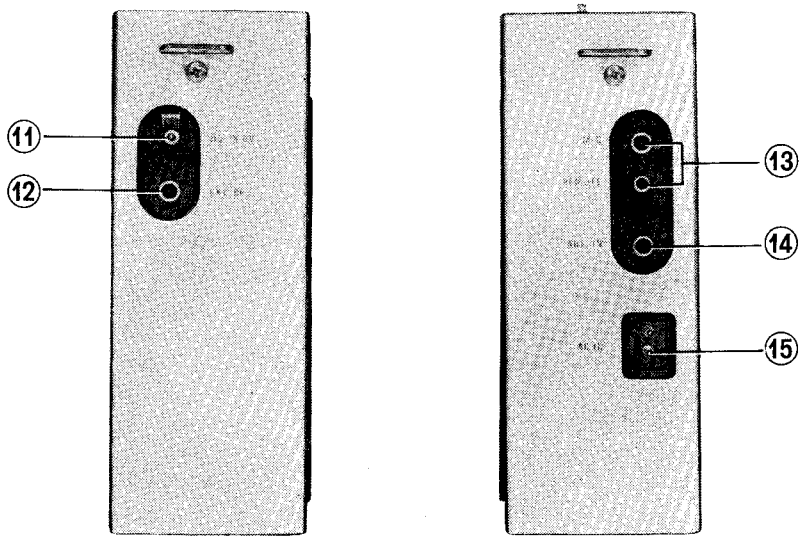


Fig. 1

① Stop Button
② VU Meter
③ Record Button
④ Fast Forward/Rewind Control
⑤ Playback Button
⑥ Tone Control
⑦ Volume Control
⑧ Cassette Ejection Button
⑨ Tape Counter & Reset Button
⑩ Cassette Holder
⑪ Car Battery Input Jack
⑫ External Speaker Jack
⑬ Microphone Jacks
⑭ Auxiliary Input Jack
⑮ AC Socket

DISASSEMBLY INSTRUCTIONS

HOW TO REMOVE REAR CASE

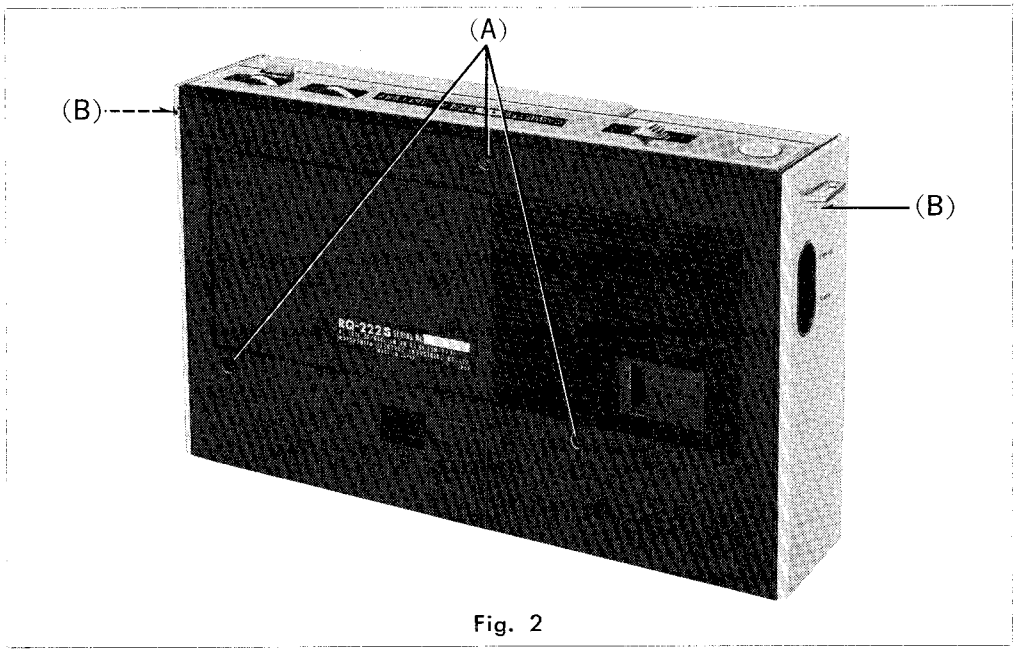


Fig. 2

1. Remove 3 Rear Case Holding Screws (A).
2. Remove 2 Side Ornament Holding Screws (B).

NOTE: Give attention to Battery Lead Wire. One of the Side Ornament Holding Screws (B) is short and the other is long.

HOW TO REMOVE CHASSIS

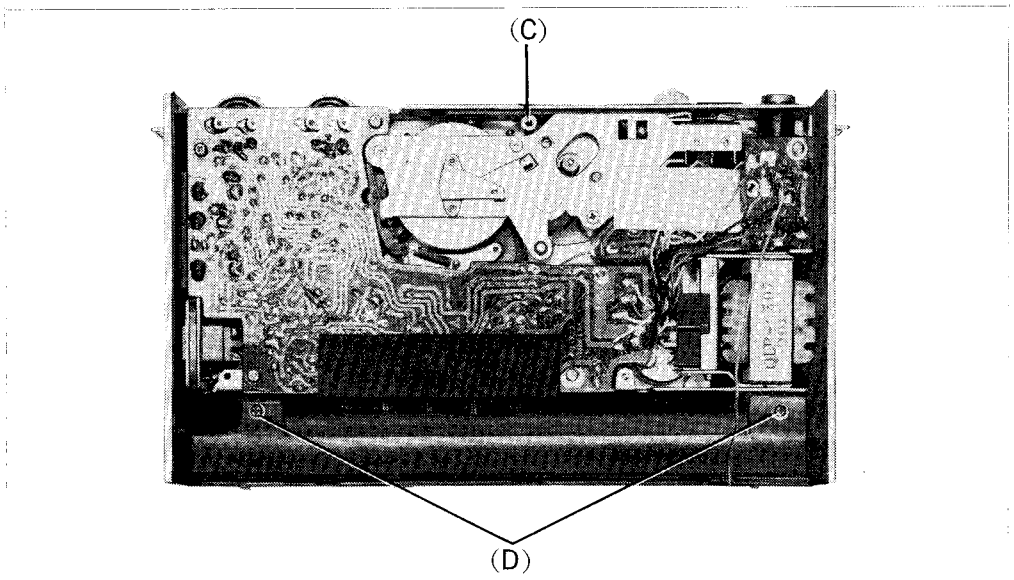


Fig. 3

1. Remove Chassis Holding Pole (C).
2. Remove 2 Chassis Holding Screws (D).

NOTE: Give attention to Speaker Cord.

3. Depress EJECT Button, Open Cassette Case and take out Chassis.

REPLACEMENT PARTS LIST

Before you give us an order for parts, please read the following instructions without fail.

1. Parts written in gothic in this Replacement Parts List are always kept in stock in our department, and can therefore be shipped earlier than other parts.
2. Parts written in slender letters are not kept in stock, and will therefore be shipped later. So place an order for them separately.
3. Disassembled parts of Sub Assembly are respectively given a suffix to the Ref. No.
4. Parts other than the above are not available from us.

LISTA DE PIEZAS DE RBPUESTO

Antes de hacernos un peaido de piezas, dígnese leer sin falta las instrucciones siguientes:

1. De las piezas cuyos nombres aparecen escritos con letras góticas en esta Lista de Piezas de Repuesto, tenemos surtido en nuestro departamento, y por lo tanto, podemos enviarlas antes que otras.
2. De las escritas con letras más finas, no tenemos surtido, por lo que su envío se retardará. Por eso, haga el favor de hacer por separado los pedidos.
3. Las piezas demontadas del Sub Assembly llevan respectivamente un sufijo a la Referencia No.
4. No podemos proveer de piezas no mencionadas arriba.

LISTE DES PIÈCES DE RECHANGE

Avant de nous commander des pièces, veuillez lire sans faute les instructions suivantes:

1. Les pièces écrites en grosses lettres dans cette Liste de rechange sont toujours en magasin dans notre section, et pourront donc s'expédier plus vite que les autres pièces.
2. Les pièces écrites en minces lettres ne sont pas en magasin, et s'expédieront plus tard. Passez-nous donc séparément votre commande pour elles.
3. Les pièces désassemblées du Sub Assembly ont chacune un suffixe au Ref. No.
4. D'autres pièces que celles montrées ci-dessus ne sont pas disponibles chez nous.

ERSATZTEILELISTE

Bitte lesen Sie die folgende Anweisung sorgfältig, bevor Sie die Bestellung auf unsere Ersatzteile geben.

1. Die Ersatzteile, die in dieser Liste mit der fetten Schrift geschrieben sind, sind immer in unserer Abtailung als Vorrat befindlich, und sind daher schneller zu liefern als andere Taile.
2. Die Ersatzteile in der dünnen Schrift sind nicht vorratig und brauchen deshalb einiger Zeit bis zur Lieferung. Bitte geben Sie daher die Bestellung separat für solche Teile.
3. Demontierte Teile der Uterbaugruppe sind je mit Nachsilbe nach dem Referenznummer versehen.
4. Andere Ersatzteile als die obigen sind nicht von uns zu lifefern.

替 換 零 件 名 單

承蒙訂購零件之前，敬請閱読下列各項.

1. 本名單中用粗字體填記的零件，經常儲存於本公司事業部，因此能比他品更快地發貨。
2. 用細字體記載的零件，沒有存庫，所以發貨時期較慢。敬請另行訂購.
3. 局部裝配組析卸的各零件，則在查詢號碼之後附有接尾字。
4. 本名單沒有記載的零件，則不能供應。

RESISTORS

Ref. No.	Description			Part No.
R1	Carbon Resistor	100 KΩ	1/4 W	ERD14VJ104
R2, 23	Carbon Resistor	270Ω	1/4 W	ERD14VJ271
R3	Carbon Resistor	1 KΩ	1/8 W	ERD18VJ102
R4, C5	Compound Resistor			EXAP152M562
R5	Carbon Resistor	68 KΩ	1/8 W	ERD18VJ683
R6	Carbon Resistor	27 KΩ	1/8 W	ERD18VJ273
R7	Carbon Resistor	12 KΩ	1/8 W	ERD18VJ123
R8	Carbon Resistor	1.8 KΩ	1/4 W	ERD14TJ182
R9, C14	Compound Resistor			EXAP471M103
R10	Carbon Resistor	2.2 KΩ	1/4 W	ERD14VJ222
(R10)	Carbon Resistor	2.7 KΩ	1/4 W	ERD14VJ272
R11	Carbon Resistor	150Ω	1/4 W	ERD14VJ151
R12	Wire-wound Resistor	1Ω	1/2 W	ERM12PK1R0
R13	Carbon Resistor	8.2Ω	1/2 W	ERD12TK8R2
R14	Carbon Resistor	680Ω	1/4 W	ERD14VJ681
R15	Carbon Resistor	17 KΩ	1/4 W	ERD14VJ173
R16, 22	Carbon Resistor	8.2 KΩ	1/4 W	ERD14VJ822
R17, C21... ...	Compound Resistor			EXAP471M823
R18	Carbon Resistor	4.7Ω	1/4 W	ERD14VJ4R7
R19	Carbon Resistor	6.8 KΩ	1/8 W	ERD18VJ682
R20	Carbon Resistor	22Ω	1/4 W	ERD14VJ220
R21	Carbon Resistor	4.7 KΩ	1/4 W	ERD14VJ472

VARIABLE RESISTORS

VR1, 2	Variable Resistor	5 KΩ	EVJA2AT12A53
VR3	Semi-fixed Variable Resistor	50 KΩ	QVL43AA00B54

CAPACITORS

C1	Electrolytic Capacitor	100μF	ECEA6V100N
C2, 9...	Electrolytic Capacitor	1μF	ECEA50V1N
C3	Mylar Capacitor	0.0022μF	ECQM05222MZ
C4	Mylar Capacitor	0.082μF	QCQM05823KZ
C6	Mylar Capacitor	0.033μF	ECQM05333KZ

Ref. No.	Description		Part No.
C7, 11	Electrolytic Capacitor	3.3μF	ECEA25V3R3N
C8, 25	Electrolytic Capacitor	10μF	ECEA10V10N
C10, 12	Electrolytic Capacitor	33μF	ECEA6V33N
C13	Electrolytic Capacitor	47μF	ECEA6V47N
C15, 24	Mylar Capacitor	0.001μF	ECQM05102MZ
C16, 26	Electrolytic Capacitor	220μF	ECEA10V220N
C17, 18	Mylar Capacitor	0.0056μF	ECQM05562MZ
C19	Electrolytic Capacitor	1000μF	ECEA10V1000N
C20	Mylar Capacitor	0.0033μF	QCQM05332KZ
C22	Mylar Capacitor	0.001μF	QCQM05102MZ
C23	Mylar Capacitor	0.047μF	QCQM05473KZ

TRANSISTORS

Tr1, 2	Transistor	2SB324 (G,H,I,J,K,L)

DIODES

D1, 2	Diode	OA90
D3	Silicon Rectifier	SIB0201CR

THERMISTOR

TH1	Thermistor	QVM800B

INTEGRATED PARTS

IC1	Integrated Circuit	EHDAA201
IC2	Integrated Circuit	EHDAP202
IC3	Integrated Circuit	EHDGA203

TRANSFORMERS

T1	Input Transformer	QLA0126
T2	Output Transformer	QLA0362
T3	Oscillator Transformer	ELM10S160
T5	Power Transformer	QLP0507

SWITCHES

S1	Record/Playback Selector Switch	ESD486N
S2	Power Switch	QSW0111S
S3	FF/REW Switch	QSM0037
S4	AC/DC Selector Switch with AC Socket	
S5	AC Voltage Selector Switch	ESD332

ELECTRICAL PARTS

E1	Record/Playback Head	QWY0107Z
E2	Erase Head	WY235Y
E3	Speaker	EAS8P75S
E4	AC Socket with S4	QJS0116
E5	Input Jack	QJA0418
E6	Output Jack	QJA0121
E7	VU Meter	QSL0065
E8	AC Adaptor Jack	QJA0421
E9	Heat Sink	QTH1047
E10	Volume Knob	QYT0176
E11	Head Shield Plate	QTS1121
E12	Printed Circuit Board Assembly	QEM1119

MECHANICAL PARTS

M1	Cassette Pressure Spring	QBP1244
M2	Cassette Holding Screw	QHQ1153
M3	Screw ⊕M2.6×3	XSN26+3
M4	Spring Washer SW 2.6φ	XWA26B
M5	Safety Lever Holder Assembly	QXQ0016
M6	Screw ⊕2φ×5	XSN2+5
M7	Screw ⊕2φ×4	XSN2+4
M8	Switch Operating Metal	QMR1125

Ref. No.	Description	Part No.
M9	**Slide Switch Rod**	**QMR1124**
M10	Screw ⊕2φ×3	XSN2+3
M11	Stop Ring E3φ	XWC3FK
M12	**Operating Rod Assembly**	**QXM0058**
M13	Fiber Washer 4.2×9×0.5	QBK7005
M14	**Intermediate Lever Assembly**	**QXL0361**
M15	Stop Ring E2.3φ	XUC23FK
M16	**Auto Stop Rod Spring**	**QBN1126**
M17	**Operating Lever Spring**	**QBN1125**
M18	**Auto Stop Rod**	**QBJ1537**
M19	**Auto Stop Lever Assembly**	**QXL0359**
M20	**Detection Piece**	**QBJ1538**
M21	**Auto Stop Lever Spring**	**QBN1127**
M22	Stop Ring E1.5φ	XUC15FK
M23	**Washer 2.1×4×0.3**	**QBJA0007**
M24	Screw ⊖M2×10	XSN2−10
M25	Screw ⊕M2×10	XSN2+10
M26	**Head Washer**	**QMZ1046**
M27	Spring Washer SW2φ	XWA2B
M28	**Head Adjustment Spring**	**QBC1103**
M29	**Head Plate**	**QBJ1536**
M30	**Pressure Roller Assembly**	**QXL0362**
M31	**Pressure Roller Lever Shaft**	**QMS1668**
M32	**Pressure Roller Spring**	**QBN1128**
M33	**Pressure Roller Shaft Collar**	**QBJ1540**
M34	Screw ⊕2φ×6	XSN2+6
M35	Head Base Plate Assembly	QXK1188
M36	Screw ⊕2.6×4	XSS26+4
M37	**Head Holding Washer-A**	**QMM1194**
M38	Screw ⊕2.6×5	XSS26+5
M39	**Head Holding Washer-B**	**QMM1195**
M40	**Cassette Ejection Rod Assembly**	**QXM0059**
M41	**Tape Counter Assembly**	**QXQ0017**
M42	Push-Button Metal-B	QML1830
M43	**Push-Button Plate Spring**	**QBP1249**
M44	Push-Button Metal-A Assembly	QXH0077
M45	Screw ⊕2.6×12	XSS26+12

Ref. No.	Description	Part No.
M46	**Playback Button**	**QBJ1527**
M47	**Record Button Assembly**	**QXB0078**
M48	**Stop Button Assembly**	**QXB0079**
M49	**Push-Button Spring**	**QBC1150**
M50	**Push-Button Holder**	**QMH1110**
M51	**Supply Reel Table Assembly**	**QXP0287**
M51-1	Stop Ring E1.5φ	XUC15FK
M51-2	Washer 2.1×3.5×0.3	QBJA0008
M52	Screw ⊕2.6φ×4	XSN26+4
M53	**Takeup Reel Table Assembly**	**QXP0288**
M54	**FF Roll Assembly**	**QXI0036**
M55	**Rewind Idler Washer**	**QMS1669**
M56	**Takeup Roll Assembly**	**QXI0037**
M57	**Rewind Belt**	**QDB0122**
M58	**Counter Belt**	**QDB0121**
M59	**Slide Switch Lever Assembly**	**QXL0360**
M60	Screw ⊕M2×9	XSN2+9
M62	**FF/REW Lever Assembly**	**QXL0358**
M63	**Rewind Lever Spring**	**QBN1129**
M64	**Flywheel**	**QXF0057**
M65	Fiber Washer 2.6×4×0.25	QBKA0001
M66	**Belt Cover**	**QBJ1535**
M67	**Idler Assembly**	**QXI0038**
M68	Fiber Washer 4.2×9×0.5	QBK70109
M69	**Takeup Idler Spring**	**QBN1131**
M70	**Motor**	**QDM0635**
M71	**FF Switch Spring Assembly**	**QXH0074**
M72	**Thrust Steel Ball 5φ**	**QDK1009**
M73	**Thrust Ball Holder Spring**	**QBC1147**
M74	**FF Rod**	**QMRA0001**
M75	**FF Lever**	**QML1837**
M76	**FF Lever Ornament**	**QMF1376**
M77	**FF Lever Reset Spring**	**QBN1133**

CABINET PARTS

Ref. No.	Description	Part No.
G1	**Main Case Assembly**	**QYB0212**
G1-1	**Side Ornament-Left**	**QGK1648**
G1-2	**Side Ornament-Right**	**QGK1649**
G1-3	Speaker Holding Metal	QKT1308
G1-4	**Cassette Case**	**QKD1113**
G1-5	**Cassette Pressure Spring**	**QBP1251**
G1-6	**Cassette Ejection Spring-A**	**QBT1426**
G1-7	**Cassette Ejection Spring-B**	**QBT1427**
G1-8	**Tapping Screw ⊕3×6**	**XTN3+6**
G2	**Rear Case Assembly**	**QYC0112**
G2-1	**Battery Terminal (+)**	**QJB0047**
G2-2	**Battery Spring**	**QJB0004**
G3	**Battery Case Assembly**	**QYF0071**
G4	**Battery Cover Assembly**	**QYF0067**
G5	**Pole**	**QMP1252**
G6	**Screw ⊕2.6×8**	**XSN26+6FZ**

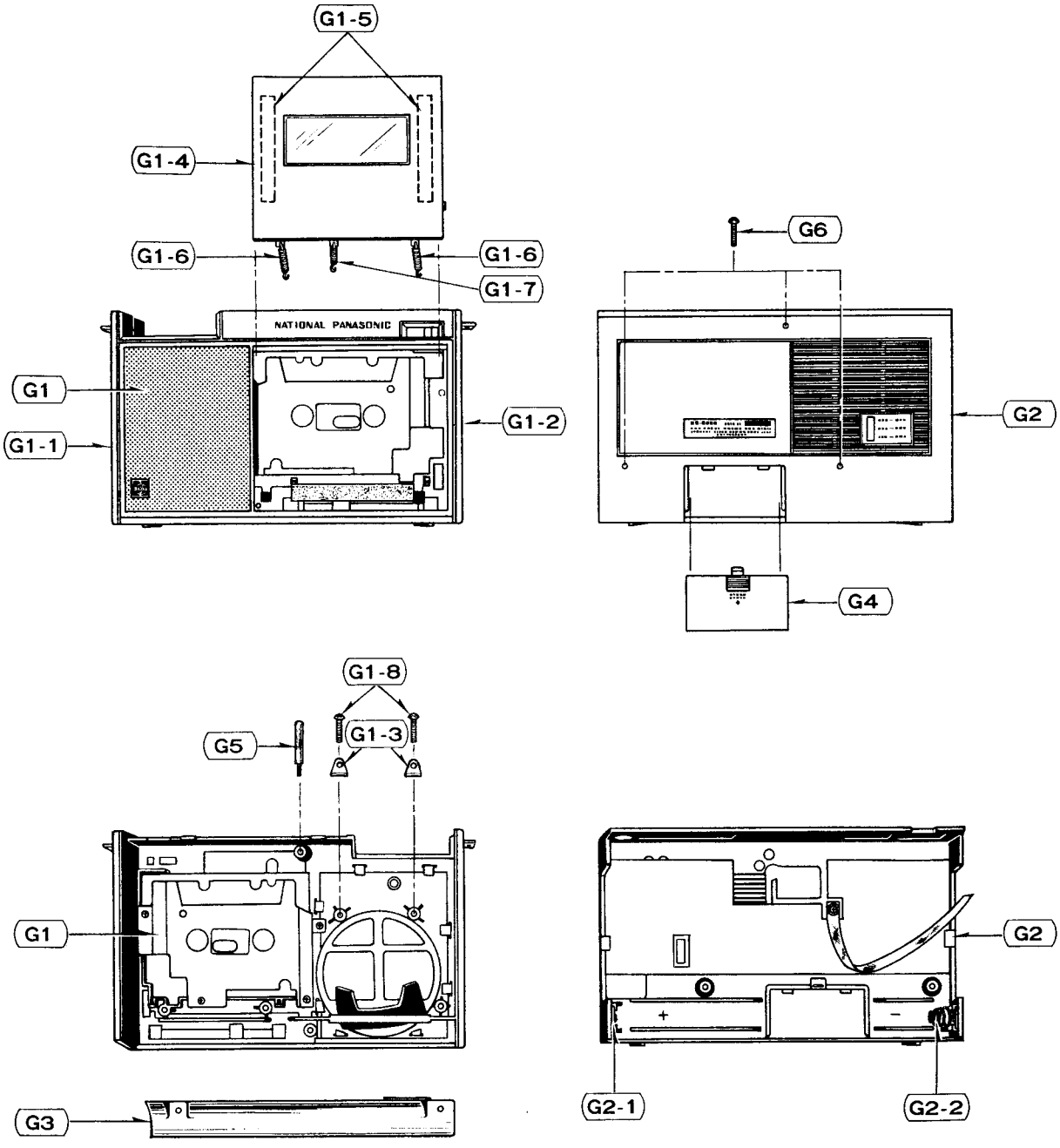
ACCESSORIES

Ref. No.	Description	Part No.
A1	**Microphone**	**WM2213N**
A2	**Microphone Stand**	**WN123N**
A3	**Earphone**	**EAE2SB1**
A4	**Radio Cord-R**	**QEB0017**
A5	**Cassette Tape**	**QFT10SSNR90Z**
A6	**AC Power Cord**	**QFC1044B**
A7	**Plug Adaptor**	**QJP0603S**
A8	**Handle Belt**	**QFK0046**
A9	**Carring Bag**	**QFK0048**
A10	**Microphone Case**	**QFK0045**
A11	**Instruction Book**	**QQT1325**

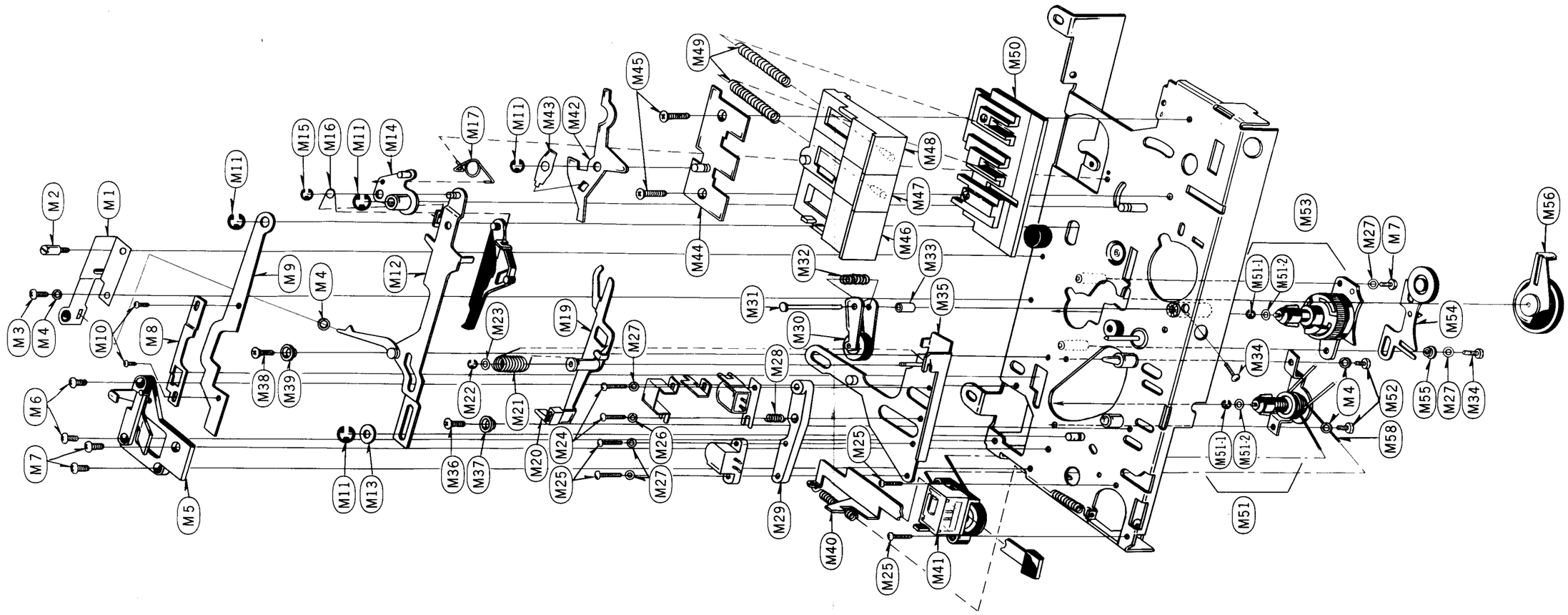
PACKINGS

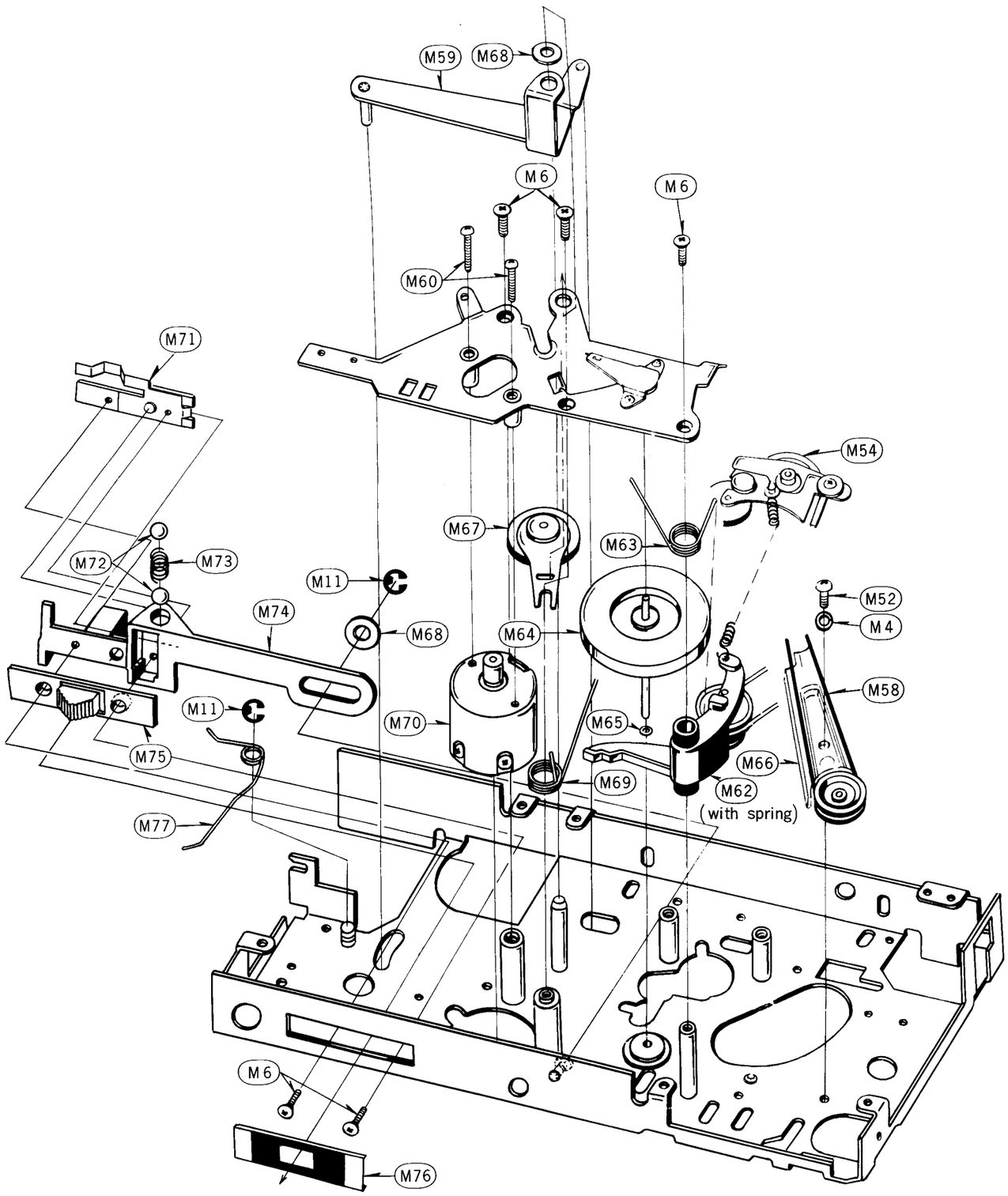
P1	**Inner Packing**	**QPN2197**
P2	Inner Cushion-A	QPN2121
P3	Inner Cushion-B	QPN2122
P4	Dust Cover	QFD0105
P5	Accessory Box	QPW1125

CABINET PARTS

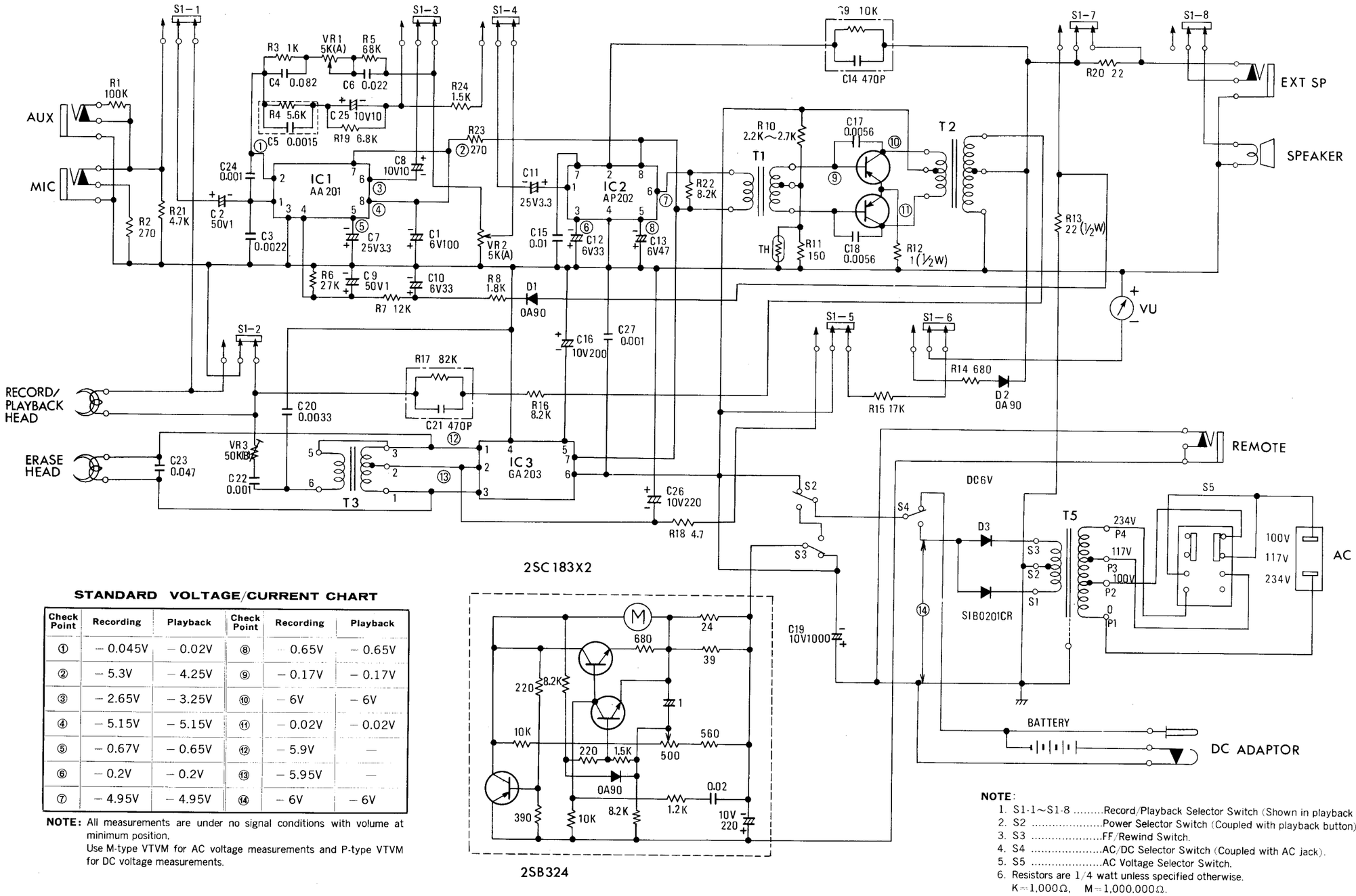


EXPLODED VIEWS




M59
M68
M6
M6
M60
M71
M54
M67
M63
M72
M73
M11
M74
M68
M64
M52
M4
M58
M11
M70
M65
M66
M75
M69
M62
(with spring)
M77
M6
M76

SCHEMATIC DIAGRAM MODEL RQ-222S



STANDARD VOLTAGE/CURRENT CHART

Check Point	Recording	Playback	Check Point	Recording	Playback
①	— 0.045V	— 0.02V	⑧	— 0.65V	— 0.65V
②	— 5.3V	— 4.25V	⑨	— 0.17V	— 0.17V
③	— 2.65V	— 3.25V	⑩	— 6V	— 6V
④	— 5.15V	— 5.15V	⑪	— 0.02V	— 0.02V
⑤	— 0.67V	— 0.65V	⑫	— 5.9V	—
⑥	— 0.2V	— 0.2V	⑬	— 5.95V	—
⑦	— 4.95V	— 4.95V	⑭	— 6V	— 6V

NOTE: All measurements are under no signal conditions with volume at minimum position.
Use M-type VTVM for AC voltage measurements and P-type VTVM for DC voltage measurements.

NOTE:

1. S1-1~S1-8 .....Record/Playback Selector Switch (Shown in playback position).
2. S2 .....Power Selector Switch (Coupled with playback button).
3. S3 .....FF/Rewind Switch.
4. S4 .....AC/DC Selector Switch (Coupled with AC jack).
5. S5 .....AC Voltage Selector Switch.
6. Resistors are 1/4 watt unless specified otherwise.
   K=1,000Ω, M=1,000,000Ω.
7. Capacitors are microfarad (μF) unless specified otherwise.
   P= Micro-microfarads.
8. Encircled numbers (◯) show the checkpoints for voltage and current. The values are marked in the standard voltage/current chart.